

ON AN ACOUSTIC PHENOMENON NOTICED  
IN A CROOKES TUBE<sup>1</sup>

A SHORT time since, while experimenting with a Crookes tube, I noticed a phenomenon which was quite striking, and so evident that it hardly seems possible that it has not frequently been observed before; but as no allusion to the effect in question has come to my notice, I venture to call attention to it.

In working with the tube in which a piece of sheet platinum is rendered incandescent by the concentration upon it of electrified particles, repelled from a concave mirror, I noticed that when the mirror was made the negative electrode, so that this concentration took place, a clear and quite musical note issued from the tube. I thought at first that the pitch of the note would coincide with that produced by the circuit-breaker used with the coil (which made about 100 breaks per second), but this did not prove to be the case. In fact very great changes in the rate of the circuit-breaker did not affect the note given by the tube. The effect seemed to be produced by the vibration of the sheet-platinum in its own period, under the influence of the molecular impact, which vibration was communicated to the glass walls of the tube by the enamel rod to which the platinum was attached, giving rise to a sound somewhat resembling the pattering of rain against a window-pane, but higher in pitch and more musical. This sound changed its character very greatly when the direction of the current was reversed, a feeble murmur only being heard. I obtained a similar musical note, though far less loud, with the "mean free-path tube," best when the middle plate was positive. With a tube containing phosphorescent sulphide of calcium, the note was very dull in its quality and low in pitch, but still quite perceptible. With this tube a change in the direction of the current, as might be expected, did not affect the sound produced. I did not obtain this musical note from any tube that I have in which the current enters and leaves by a straight wire, except in the case of a single Geissler's tube exhausted so as to give stratifications, in which it was very feebly heard.

UNIVERSITY AND EDUCATIONAL  
INTELLIGENCE

A LARGE number of ladies and gentlemen assembled on Tuesday in Cowper Street to witness the laying of the foundation-stone of the Finsbury Technical College which it has lately been resolved to establish by the City and Guilds of London Institute, by His Royal Highness Prince Leopold. According to the report of the Council of the Institute to the Governors, the projected building is estimated to cost 20,382*l.*, exclusive of the professional charges, fittings, and other incidental expenses, which will amount to some 5000*l.* In the plans ample accommodation is provided for instruction in the application of physics, chemistry, and mechanics to the various industries. The building will contain thirty-two rooms, including a large laboratory, two lecture theatres, class, drawing, private, and engine rooms, workshops, and clerks' offices. Lord Selborne, in welcoming the Prince, after noting the progress of science as applied to arts and manufactures in this and other countries, said that in the race of competition the prize must in the end belong to those who best knew how to build the superstructure of arts and manufacture on their handicrafts with a sound foundation of scientific knowledge. The ceremony of laying the stone was gone through by Prince Leopold, who in the course of his remarks said that the institution has proclaimed its determination to enter into generous rivalry with other countries in those branches of trade and commerce in which, one must needs confess, our native industries have of late years not taken that position which we as Englishmen would wish them to occupy. We are beginning to realise that a thorough and liberal system of education must be placed within the reach of the British artisan in order to enable him to hold his own against foreign competition. Mr. Mundella said that by instituting this college they were taking the same step in applying science to industries which had been taken in applying arts to manufactures at South Kensington. Among the articles deposited in the cavity of the foundation-stone was a copy of NATURE.

<sup>1</sup> Read by C. R. Cross at a meeting of the American Academy of Arts and Sciences, November 10, 1880.

THE Berlin correspondent of the *Times* states that a movement is afoot among the Germans in the United States for the creation of a native University on the model of those in the old country, to be called the Kaiser Wilhelm Universität, in commemoration of the "glorious resuscitation of the Fatherland." Milwaukee is mentioned as the likeliest candidate among all the cities of the West that aspire to the honour of harbouring this plant of pure Teutonic culture, which would cost, to begin with, about two million dollars. It is not at all probable, however, that the scheme will come to anything.

## SCIENTIFIC SERIALS

THE *Journal of Anatomy and Physiology* for April, 1881 (vol. xv. part 3), contains:—On the bones, articulations, and muscles of the rudimentary hind-limb of the Greenland right whale (*Balaena mysticetus*), by Dr. J. Struthers.—On the stridulating apparatus of *Callomystax gagata*, by Prof. A. C. Haddon (Plate 20).—On the sternum as an index of age and sex, by Dr. Thomas Dwight (concludes that the breast-bone is no trustworthy guide either to the sex or the age).—On the mechanism of costal respiration, by Dr. J. M. Hobson (with figures).—On the membrana propria of the mammary gland, by Dr. C. W. M. Moullin (with figures).—On double and treble staining of microscopical specimens, by Dr. W. Stirling.—On the comparative anatomy of the lymphatics of the mammalian urinary bladder, by Drs. George and F. Elizabeth Hoggan (plate 21).—Notes on a dissection of a case of epispadias, and on the morphology of the muscles of the tongue and pharynx, by Dr. R. J. Anderson.—On the so-called movements of pronation and supination in the hind-limb of certain marsupials, by Dr. A. H. Young.—A contribution to the pathological anatomy of pneumoconiosis (*Chalicosis pulmonum*), by Thos. Harris (plate 22).—On the histology of some of the rarer forms of malignant bone tumours, by Robt. Maguire.—On the morbid histology of the liver in acute yellow atrophy, by Prof. Dreschfeld.—On the relationship between the muscle and its contraction, by Dr. J. Theodore Cash.—Anatomical notes.

The *Quarterly Journal of Microscopical Science*, April, 1881, contains—On the minute anatomy of the branchiate echinoderms, by P. Herbert Carpenter (plates 11 and 12).—On young stages of *Limnocoelium* and *Geryonia* (plate 13), and observations and reflections on the appendages and on the nervous system of *Apus cancriformis*, by E. Ray Lankester (plate 20).—On the origin and significance of the metamorphosis of *Actinotrocha*, by Edmund B. Wilson (plates 14 and 15).—A further contribution to the minute anatomy of the organ of Jacobson in the guinea-pig (plates 16 and 17), and histological notes, by Dr. E. Klein.—On the development of microscopic organisms occurring in the intestinal canal, by Dr. D. Cunningham (plate 18).—Researches upon the development of starch-grains, by A. F. W. Schimper (plate 19), translated from the *Botanische Zeitung*.—On the cause of the striation of voluntary muscular tissue, by Dr. J. B. Haycraft.—On the relation of micro-organisms to disease, by Prof. Lister; with notes and memoranda.

The *American Naturalist*, April, 1881.—Wm. Trelease, on the fertilisation of *Salvia splendens* by birds. (The fertilisation is apparently effected by a humming-bird.)—Prof. E. D. Cope, on the origin of the foot-structures of the Ungulates.—C. A. White, progress of invertebrate palaeontology in the United States for 1880.—Carl F. Gissler, evidences of the effect of chemico-physical influences on the evolution of branchiopod Crustaceans.—Dr. R. W. Schufeldt, notes on a few of the diseases and injuries of birds.—A. S. Packard, jun., the brain of the locust (with three plates).

*Bulletin of the United States Geological and Geographical Survey of the Territories*, vol. vi. No. 1.—On the vegetation of the Rocky Mountain region and a comparison with that of other parts of the world, by Asa Gray and Joseph D. Hooker (pp. 1, 77).—On some new Batrachia and Reptilia from the Permian beds of Texas; on a wading bird from the Amyzon shales; on the Nimravidae and Canidae of the Miocene period; and on the Vertebrata of the Wind River Eocene beds of Wyoming, by E. D. Cope.—The osteology of *Speotyto cunicularia*, var. *hypogaea*, and on the osteology of *Eremophila alpestris*, by Dr. R. W. Schufeldt.—A preliminary list of the North American species of *Agrotis*, by A. R. Grote.

*Revue internationale des Sciences biologiques*, March, 1881.—Prof. Strasburger, the history of the actual state of the cell theory.—M. Debierre, physical and biological dynamism.—Prof. Ray Lankester, embryology and classification of animals.

*Brain: a Journal of Neurology*.—Part 13 for April, 1881, contains, of original articles:—Dr. J. C. Bucknill, on the late Lord Chief Justice (Sir A. Cockburn) of England.—Dr. B. Bramwell, on the differential diagnosis of paralysis.—Dr. A. Flint, jun., on the cause of the movements of ordinary respiration.—Dr. Julius Althaus, on some points in the diagnosis and treatment of brain disease.—Dr. C. S. W. Cobbold, observations on certain optical illusions of motion.—Bevan Lewis, methods of preparing, demonstrating, and examining cerebral structure in health and disease.

*Revue des Sciences Naturelles*, 2<sup>me</sup> série, tome 2, No. 4, March, 1881, contains:—M. A. Salvatier, on the mechanism of respiration in the Chelonians (plates 5 and 6).—Dr. E. Jourdan, notes on the anatomy of *Distomum clavatum*, Rud (plates 7 and 8).—M. A. Villot, another word on the fresh-water Pliocene of the Bas Dauphiné.—M. Collot, provisional study of the Anthracotherium remains from the lignites of Volx.—M. Viguière, note on the lithographic chalks of Nebias.—M. Kieffer, on the herborisations of Strobilberger at Montpellier in 1620 (*finis*).—Scientific review of works published in France on zoology, botany, and geology.

*Journal of the Asiatic Society of Bengal*, 1880, No. 4 (vol. xlix. Part 2).—W. T. Blanford, contributions to Indian Malacology, No. 12—new land and fresh-water shells from Southern and Western India, Burmah, the Andamans, &c. (plates 2 and 3).—J. Wood Mason and L. de Nicéville, diurnal Lepidoptera from Port Blair, with descriptions of some new or little-known species, and of a new species of *Hestia* from Burmah (plate 13).—W. T. Blanford, description of an Arvicola (*A. Wynnei*) from the Punjab Himalaya.—Capt. G. F. L. Marshall and L. de Nicéville, new species of Rhopaloceros Lepidoptera from the Indian region.—J. Wood Mason, Parantirrhoea Marshalli, the type of a new genus and species of Rhopaloceros Lepidoptera from South India.

*Verhandlungen der k. k. zoologisch-botanischen Gesellschaft in Wien*, Bd. xxx., Heft 2, 1881, contains the minutes of proceedings, June to December, 1880, and the following memoirs:—F. Krasan, report in connection with new investigations on the development and origin of the lower organisms (plate 7).—Dr. A. v. Krempelhuber, a new contribution to the lichen flora of Australia.—Th. Beling, the metamorphosis of *Cenomyia ferruginea*, Scop.—Prof. Josef Mik, on the mounting and collecting of Diptera, descriptions of new Diptera, and dipterological notes (plate 17).—H. B. Moschler, contribution to the Lepidopterous fauna of Surinam, No. iii. (plates 8 and 9).—S. Schulzer, mycological contributions.—J. Stussiner, *Leptomastax Simonis*, a new species of subterranean beetle.—Hans Leder, on the Coleopterous fauna of the Caucasus, No. iii., in co-operation with Dr. Eppelsheim and E. Reitter.—D. Hirc, the Molluscan fauna of the Liburnian Karst.—Fritz Wachtl, contribution to our knowledge of the European gall-producing insects (plate 18).—Count E. Keyserling, new American spiders (plate 16).—Dr. Ludwig Lorenz, on *Distomum robustum*, sp. n., from the African elephant (plate 19).—A. von Pelzeln, on a hornless deer.—Dr. F. Löw, on a more exact knowledge of the procreateness of the sexual individuals in Pemphigus.—Dr. R. Drasche, on a new species of Echiurus from Japan (*E. uncinatus*), and remarks on *Thalassema erythrogrammon*, Leuckart (plate 20).—Dr. R. Bergh, monograph of Polyceridae (plates 10 to 15).

*Gegenbaur's morphologisches Jahrbuch*, vol. 17, part I, contains—Prof. Oscar Herburg, on the exoskeleton of fishes: No. 3, the Pediculati, the Discoboli, the genus Diana, the Centriscidae, some genera of Triglidae, and the Plectognathi (plates 1 to 4).—On the duplex nature of the ciliary ganglion, by Prof. W. Krause (plate 5).—On the abdominal muscles of the crocodiles, lizards, and tortoises, by Dr. Hans Gadow (plate 6).—Contributions to the developmental history of Petromyzon, by W. B. Scott (Princeton), (with plates 7 to 11).—On the "pars facialis" of the lachrymal bone, by Prof. Gegenbaur.

*Rivista Scientifico-Industriale*, No. 6, March 31.—On earthquakes, by Dr. Bassani.—New plant, by S. Fenzi.—Determination of the velocity of sound in chlorine, by Prof. Martini.

*Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig*, 1879–80.—On double monstrosities in fishes, by Prof. Rauber.

—On the finer structure of milk-glands, by the same.—On Aphthæ, by Prof. Hennig.—On results of glacier thrust, by Prof. Credner.—On the geological results of a deep boring at the Berlin Railway at Leipzig, by the same.—On the reduction of anatomical forms to equal size, by Prof. Hennig.—On the system of spinal ganglia, by Prof. Rauber.—On chlorophyll, by Dr. Sachsse.—On an optical combination which may be applied as objective of a telescope, by Dr. von Zahn.—On *Lichen bombycinus*, by Prof. Hennig.—On the development of cells to organs of locomotion, by Dr. Simmroth.—On Negrito skeletons from the Philippines in European museums, by Herr Meyer.—On the cycle of forms of some unicellular algæ, by Herr Richter.

*Atti della R. Accademia dei Lincei*, vol. v. fasc. ix.—On the discharge of condensers, the theory of the electrophorus, and its analogy with condensers, by Prof. Villari.—New observations of Pechûle's comet at the Royal Observatory of the Roman College, by P. Tacchini.—Two solar regions in continuous activity during 1880, by the same.—On the motion of a heterogeneous fluid ellipsoid, by S. Betti.—New method for the volumetric evaluation of molybdenum, by Signors Mauro and Dunesi.—On some compounds of the fufuric series, by Signors Ciamician and Dennstedt.—Separation and determination of nitric and nitrous acid, by S. Piccini.—Observations on the method commonly adopted in treatment of like fundamental questions of infinitesimal analysis, by S. Casorati.—On the drainage works of the Roman subsoil, by S. Tommasi Crudeli.

## SOCIETIES AND ACADEMIES

### LONDON

**Zoological Society**, May 3.—Prof. W. H. Flower, LL.D., F.R.S., president, in the chair.—Prof. F. Jeffrey Bell, F.Z.S., read the first of a series of papers on the systematic arrangement of the *Asterioidea*. In the present communication the author directed attention to the large number—more than eighty—of described species of the genus *Asterias*, the subdivision of which had never yet been attempted. After a list of the species with reference to one description of each, and a list of the synonyms, he proceeded to describe and make use of certain characters as an aid in the classification of the species; the number of rays, of madreporiform plates, and of ambulacral spines forming the more important, and the form and character of the spines the less important points. The author then proposed a mode of formulating results by the use of certain symbols, and concluded by describing five new species.—A communication was read from Dr. M. Watson, F.Z.S., containing some observations on the anatomy of the generative organs of the spotted hyæna, in continuation of a previous paper on the same subject.—Mr. Oldfield Thomas, F.Z.S., read a memoir on the Indian species of the genus *Mus*. The present paper was an attempt to clear up the existing confusion in the synonymy of the Indian species of this genus, of which the author recognised about nineteen as valid.—A communication was read from Mr. Edgar A. Smith, containing remarks on some specimens of *Cypræa decipiens*, lately received by the British Museum.—A second paper by Mr. Smith contained the description of two new species of shells from Lake Tanganyika.—Capt. G. E. Shelley read a paper containing an account of seven collections of birds recently made by Dr. Kirk in the little explored regions of Eastern Africa. Two new species were proposed to be called *Coccyzus albo-notatus* and *Urobrachya Zanzibarica*.—Mr. Arthur G. Butler, F.Z.S., read a paper on a collection of Lepidoptera made in Western India, Beloochistan, and Afghanistan by Major Charles Swinhoe. The collection contained examples belonging to three new genera and fifteen new species.

**Chemical Society**, May 5.—Dr. Roscoe, president, in the chair.—The following papers were read:—On the action of humic acid on atmospheric nitrogen, by E. W. Prevost. The author has repeated some of the experiments of E. Simon (*Land. Vers. Stats.*, xviii.) on the above action; he is quite unable to confirm the results of that investigator, and concludes that under ordinary circumstances no formation of ammonia takes place when humic acid and nitrogen are allowed to remain in contact.—On the active and inactive amylamines corresponding to the active and inactive alcohols of fermentation, by R. T. Plimpton. The author has prepared and examined the mono-, di-, and triamylamines and some of their compounds. The active amylamines polarise strongly; their salts do not crystallise